REDUCTION OF MACHAERANTHERA ARIDA TO VARIETAL STATUS UNDER M. COULTERI (ASTERACEAE-ASTEREAE)

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Turner and Horne (1964) in their treatment of Machaeranthera sect. Psilactis proposed M. arida to accomodate a widespread variable group of lavender-rayed annuals that occurred in the desert regions from northeastern Sonora, Mexico, adjacent southern California, southwestern Arizona and extending northward into southernmost Nevada. At the time of this treatment they knew M. coulteri A. Gray from only a few collections, all from the vicinity of the type locality near Guaymas, Mexico. These few plants were largely glabrous, procumbent perennials which were related to, but quite distinct, from the supposedly annual, pubescent, M. arida. Over the past two decades numerous new collections of these two taxa have accumulated in herbaria and these show that collections of M. coulteri from the vicinity of Guaymas are quite variable as to habit. Thus Powell and Sikes (1684, TEX) describe M. coulteri as "tap-rooted perennials 1-2 feet tall" while Felger (86-60, TEX) describe the taxon as "annual or long-lived annual". Inded, as portrayed on herbarium sheets, M. coulteri may be a delicate annual (Felger et al.86-61, TEX), weak perennial (Felger 86-72, TEX) or robust perennial as noted by Powell and Sikes (above). Whatever the habit, such plants are clearly what we accepted in our 1964 treatment as M. coulteri.

The latter taxon can be distinguished from M. arida by its mostly glabrous mid-stems, but northward the two taxa appear to intergrade (e.g., Hartman et al. 3516, TEX; 35 mi NW of Guaymas) and the numerous new collections of both taxa from Northwestern Sonora now strongly suggest that the two are but varietally distinct (i.e., allopatric entities that differ in only a few characters which tend to intergrade in regions of contact).

It should also be noted here that Reveal (1970) has bestowed the name M. ammophila upon populations from Nevada that we called M. arida. In addition, Jackson and Johnson (1967) have given the name M. arizonica to populations of M. arida from the Organ Pipe Cactus National monument that have somewhat larger heads than is typical of the species elsewhere. The latter collections are said to be perennial and more-or-less intermediate to M. arida and M. crispa, but habit in both of the latter taxa varies from annual to seemingly perennial. In any case, as I view the types of M. arizonica, they readily fall under the variation pattern of M. arida.

I have recently reviewed (in prep.) the species and infrageneric categories of Machaeranthera (sensu lato) and have no hesitation in reducing M. arida to varietal status under M.

coulteri, as follows: Machaeranthera coulteri A. Gray var. arida (Turner & Horne) Turner, comb. nov. - based upon M. arida Turner & Horne, Brittonia 16: 324. 1964.

In my opinion the following are synonyms of this variety. This view has been independently expressed by Hartman (1976).

Machaeranthera arizonica Jackson & Johnson, Rhodora 69: 476. 1967.

Machaeranthera ammophila Reveal, Bull. Torr. Bot. Club 97: 172. 1970.

Hartman (1976) recognized four species (M. arida, M. coulteri, M. crispa and M. parviflora) in his treatment of the sect. Arida of Machaeranthera, which he separates from the sect. Psilactis (where these were positioned by Turner & Horne, 1964), largely by base chromosome number (x=5), flavonoid chemistry and seed morphology. I agree with this phyletic partitioning. In a more recent treatment of this group by Hartman and Lane (pers. comm.) they maintain M. arida and also place M. riparia (Kunth) Jones in the section. Based on my knowledge of the group I would exclude the latter species. Jackson (1978) has also described a new species of the sect. Arida (M. turneri), which I would also accept. Altogether, 5 or 6 taxa now makeup the section Arida. The following key will identify these taxa (except for M. riparia which is readily distinguished by its flattened, obovoid achenes with biseriate pappus and shorter triangular anther appendages).

Key to described taxa recognized in sect. Arida

1. Receptacle 9-11 mm across; disk florets mostly 100-250; plants of Chihuahua ..... M. turneri

1. Receptacle 2-6 mm across; disk florets mostly 20-150.

    2. Ray florets mostly without pappus (i.e., only occasional individuals possess a pappus on the ray florets); plants of Baja Calif, NW Sonora and the adjacent SW U.S.A. (Western Arizona, S Calif and southernmost Nevada).

        3. Mid-stems densely glandular-pubescent with mostly short trichomes; heads (excluding rays) 1.0-1.5 cm across; plants of central Baja California.. M. crispa

        3. Mid-stems either glabrous or sparsely glandular-pubescent, the latter nearly always interspersed with longer, crisp, non-glandular hairs; head mostly 0.4-1.0(1.3) mm

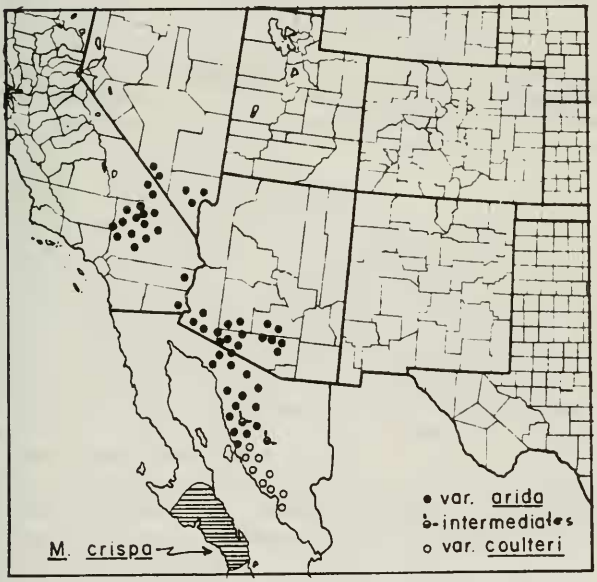
across (excluding rays); plants of NE Sonora, Mexico and adjacent regions of the U.S.A.

4. Mid-stems glabrous or sparsely glandular (intergrades with var. arida) .... M. coulteri var. coulteri

4. Mid-stems rather densely glandular-pubescent, nearly always with a few crisp eglandular hairs...M. coulteri var. arida

2. Ray florets pappose; mid-stems glabrous or nearly so; plants of northcentral Mexico northward to E Arizona, SE Utah, SW Colorado and trans-Pecos Texas ..... M. parviflora

The geographical relationship of the above five taxa are shown below.



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